

## ABSTRACT

The present invention addresses the above described problems by simplifying the assumptions on possible motions made by a user. This simplification process can take place by making an assumption that the motion of the device will travel along a certain preferential motion arc, which will be referred to herein as the “Javal arc.” Calculations of motions of the device can be made based on these Javal arcs. Additionally, the double integration of each accelerometer is now eliminated and the expensive accelerometers are replaced by two magnetic sensors.